



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/350,060	07/08/1999	DAVID MONROE CHAPMAN	W9443-02	7518

7590 01/10/2003

CHARLES A CROSS
W R GRACE & CO - CONN
PATENT DEPARTMENT
7500 GRACE DRIVE
COLUMBIA, MD 210444098

EXAMINER

AHMED, SHEEBA

ART UNIT	PAPER NUMBER
----------	--------------

1773

DATE MAILED: 01/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/350,060

Applicant(s)

CHAPMAN, DAVID MONROE

Examiner

Sheeba Ahmed

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 23 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Amendments to claim 23 have been entered in the above-identified application.

Claims 1-30 are pending.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

2. Claims 14-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Abe et al. (EP 0586846B1).

Abe et al. disclose an ink jet recording sheet comprising a support and an ink receiving layer coating (**corresponding to the coating of the claimed invention**) containing a cation-modified silica (**corresponding to the inorganic oxide of the claimed invention**) (Page 1, lines 57-58). The cation-modified silica is coated with a metal oxide such as aluminum oxide. The ink receiving layer contains various polymers such as polyvinyl alcohol (**corresponding to the water soluble polymer of the claimed invention**) and polyvinyl acetate (**corresponding to the non-ionic latex of the claimed invention**) used in combination with a cationic polymeric surfactant (Page 2). The coating is provided on the substrate in an amount of 10 g/m² (**thus meeting the limitations of claim 22**) (Page 5, lines 45-46). The Examiner takes the position that the silica disclosed by Abe et al. must have the claimed pore volume given that the chemical composition and the method of making the silica disclosed by Abe et al. and that of the claimed invention are identical as evidenced by the fact that the Applicants specifically state on Page 14 of the Specification that the cationic materials of the instant invention are prepared by the techniques given in US 3,007,878 and Abe

specifically states that their cation modified silica is prepared by the method described in US 3,007,878. All limitations of claims 14-22 are either inherent or disclosed in the above reference.

Claim Rejections - 35 USC § 103

3. Claims 1-3, 5-8, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes et al. (US 5,660,928) in view of Alexander et al. (US 3,007,878).

Stokes et al. disclose a coated substrate for use in ink jet printing (Column 1, lines 5-10). The coated substrate has a first layer of a film or a nonwoven web ***(corresponds to the substrate of the claimed invention)*** and a second layer overlying the first layer and comprising a latex binder, 25 to 65 weight % hydrophillic silica *(since the silica is not soluble, the Examiner takes the position that the composition of the second layer must have a solids content of at least 25% by weight)* and a water soluble viscosity modifier (Column 2, lines 17-30). Examples of the latex binder include polyvinyl acetate ***(corresponds to the non-ionic latex polymer of the claimed invention; the Examiner takes the position that the polyvinyl acetate disclosed by Stokes is not ionic)*** (Column 3, lines 14-25), the hydrophillic silica has a pore volume of about 1 to about 2 cc/g ***(corresponds to the porous inorganic oxide of the claimed invention)*** (Column 3, lines 43-46) and the water soluble viscosity modifier may be a polyacrylamide ***(corresponds to the water soluble polymer of the claimed invention)*** (Column 4, lines 7-13). Stokes et al. but do not specifically state that the inorganic oxide possesses a cationic charge. However, Alexander et al. disclose colloidal, positively charged particles of a silica core coated with an aluminum oxide (Column 1, lines 11-15 and Column 3, lines 45-50) which are used in coating

Art Unit: 1773

compositions to improve adhesion. Accordingly, it would have been obvious to one having ordinary skill in the art to replace the silica particles disclosed by Stokes et al. with the colloidal, positively charged particles of silica coated with an aluminum oxide given that use of such charged particles in coatings leads to better adhesion. With regards to the viscosity limitation, the Examiner takes the position that the composition of the second layer disclosed by Stokes et al. must have the claimed viscosity given that the chemical composition and the amount of each component in the composition disclosed by Stokes et al. and that of the claimed invention are identical.

4. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes et al. (US 5,660,928) in view of Alexander et al. (US 3,007,878) and Williams et al. (US 5,494,759).

Stokes et al. and Alexander et al., as discussed above, do not specifically state that coating comprises a cationic polymer. However, Williams et al. disclose a coating composition for preparing an ink receiving layer for a printing material (Column 1, lines 6-9). The printing material comprises a support substrate and an ink receiving layer applied to the support and containing a polyvinyl alcohol and/or a vinyl acetate homopolymer and a quaternary ammonium compound (Column 2, lines 19-23). The quaternary ammonium salt is preferably polydiallyldimethylammonium chloride (Column 2, lines 40-41). The ink receiving layer may contain inorganic pigments having a pore volume of about 1.0 to 2.5 ml/g wherein the amount of pigment is 15 to 80 wt.% of the ink receiving layer (Column 2, lines 49-55). The coating weight of the ink receiving layer when applied to the substrate is 0.5 to 15 g/m² (Column 2, lines 58-61). The substrate may be paper or a synthetic resin (Column 2, lines 62-67). Accordingly, it would have been obvious to one having ordinary skill in the art to add a cationic polymer to the

coatings disclosed by Stokes et al. and Alexander et al. and to apply the coating to the substrate at a coating weight of 0.5 to 15 g/m² given that Williams et al. specifically teach that doing so leads to good water fastness and wet rub off properties in addition to a high color density, high image definition and high clarity.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes et al. (US 5,660,928) in view of Alexander et al. (US 3,007,878) and Vassiliades et al. (US 4,115,474).

Stokes et al. and Alexander et al., as discussed above, do not specifically state that the polyvinyl acetate is enclosed in a polyvinyl alcohol shell. However, Vassiliades et al. disclose microcapsules comprising a polymeric shell of polyvinyl alcohol encapsulating a polymeric core (Column 2, lines 11-20, 67-68 and Column 3, lines 22-25). Accordingly, it would have been obvious to one having ordinary skill in the art to add a polyvinyl alcohol shell to the polyvinyl acetate disclosed by Stokes et al. given that Vassiliades et al. specifically state that doing so is desirable to bond a nonadherent polymer to a cellulosic substrate.

6. Claims 1-3, 5-8, 10, 13, and 23-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (EP 0586846B1).

Abe et al. disclose an ink jet recording sheet comprising a support and an ink receiving layer coating containing a cation-modified silica (Page 1, lines 57-58). The cation-modified silica is coated with a metal oxide such as aluminum oxide (*the Examiner takes the position that the silica disclosed by Abe et al. must have the claimed pore volume given that the chemical composition and the structure of the silica disclosed by Abe et al. and that of the claimed invention are identical*). The ink receiving

layer contains various polymers such as polyvinyl alcohol and polyvinyl acetate **(corresponding to the non-ionic latex polymer of the claimed invention)** used in combination with a cationic polymeric surfactant **(thus meeting the limitations of claims 25 and 26)**(Page 2). Abe et al. disclose the claimed invention but do not specifically state that the coating composition has a solids content of greater than 20% by weight, a volume fraction of 0.25 to 0.5, or a weight ratio of the polyvinyl acetate to the polyvinyl alcohol in the range of 0.2 to 5.0. However, the Examiner takes the position that it would have been obvious to one having ordinary skill in the art to have determined the optimum solids content, the optimum volume fraction and the optimum weight ratio of the nonionic latex to polyvinyl alcohol given that the drying property of the ink, the film forming properties of the ink-receiving layer and the gloss and sharpness of the image on the ink receiving layer can be controlled by optimizing the solids content and the weight ratio of one polymer to the other. With regards to the viscosity limitations, the Examiner takes the position that the composition of the second layer disclosed by Abe et al. must have the claimed viscosity given that the chemical composition and the amount of each component in the composition disclosed by Abe et al. and that of the claimed invention are identical.

7. Claims 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (EP 0586846B1) in view of Vassiliades et al. (US 4,115,474).

Abe et al., as discussed above, do not specifically state that the polyvinyl acetate is enclosed in a polyvinyl alcohol shell. However, Vassiliades et al. disclose microcapsules comprising a polymeric shell of polyvinyl alcohol encapsulating a polymeric core (Column 2, lines 11-20, 67-68 and Column 3, lines 22-25). Accordingly, it would have been obvious to one having ordinary skill in the art to add a polyvinyl

alcohol shell to the polyvinyl acetate disclosed by Abe et al. given that Vassiliades et al. specifically state that doing so is desirable to bond a nonadherent polymer to a cellulosic substrate.

Response to Arguments

8. Applicant's arguments filed on October 23, 2002 (Paper No. 14) have been fully considered but they are not persuasive.

Applicants traverse the rejection of claims 14-22 under 35 U.S.C. 102(b) as being anticipated by Abe et al. (EP 0586846B1) and submit that Abe does not disclose a porous inorganic oxide having a pore volume of 0.6 to 3.0 cc/g and that US 3,007,878 goes no further in showing that the instant invention is anticipated. However, as pointed out in the Office Action mailed on June 24, 2002 (Paper No. 13), the Examiner has taken the position that the silica disclosed by Abe et al. must have the claimed pore volume given that the chemical composition and the method of making the silica disclosed by Abe et al. and that of the claimed invention are identical as evidenced by the fact that the Applicants specifically state on Page 14 of the Specification that the cationic materials of the instant invention are prepared by the techniques given in US 3,007,878 and Abe specifically states that their cation modified silica is prepared by the method described in US 3,007,878. In other words, the silica disclosed by Abe et al. and that of the claimed invention ***must be*** identical, i.e., must be porous and have the same porosity, given that both are prepared by the same process, i.e., the process described in US 3,007,878. Applicants further argue that Abe does not disclose a non-ionic latex. However, the Examiner would again like to point out that Abe simply discloses a

Art Unit: 1773

polyvinyl acetate latex. It is clear from the chemical structure of polyvinyl acetate that the structure does not carry a charge and is hence non-ionic and it is the Examiner's position that polyvinyl acetate can be rendered cationic or anionic by the appropriate modification but a non-modified polyvinyl acetate is simply non-ionic.

Applicants further traverse the rejections under 35 U.S.C. 103(a) as being unpatentable over Stokes et al. (US 5,660,928) in view of Alexander et al. (US 3,007,878) (i.e., claims 1-8 and 10-13) and submit that the Stokes does not expressly describe or suggest non-ionic latexes and that in view of the evidence presented by the Applicants (i.e., the Roche literature) one of ordinary skill in the art would not be motivated to specifically select a nonionic latex. It is the Applicants position that one can not infer that the polyvinyl acetate disclosed by Stokes is non-ionic. In response, the Examiner would like to point out that Stokes simply discloses a polyvinyl acetate latex. It is clear from the chemical structure of polyvinyl acetate that the structure does not carry a charge and is hence non-ionic. The Applicants have submitted a document from Rohm&Haas that shows that polyvinyl acetate may be anionic. However, the Examiner takes the position that polyvinyl acetate can be rendered cationic or anionic by the appropriate modification but **a non-modified polyvinyl acetate is simply non-ionic**. Applicants further submit that the combination of Stokes and Alexander would arrive at a coating formulation containing non-porous particles and not the cationic porous inorganic oxide particles of the claimed invention. However, the Examiner takes the position that the silica disclosed by Alexander must have the claimed pore volume, and hence must be porous, given that the Applicants specifically state on Page 14 of the

Specification that the cationic materials of the instant invention are prepared by the techniques given in US 3,007,878 to Alexander.

With regards to the rejection of claims 1-3, 5-8, 10, 13, and 23-30 under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (EP 0586846B1), the Applicants submit that the Examiner is in error to state that the pore volume of Abe et al's silica is the same as that of the instant invention and that one would not be motivated to determine optimum solids content, volume fraction and weight ratios of nonionic latex. However, as pointed out above, the silica disclosed by Abe et al. and that of the claimed invention **must be** identical, i.e., must be porous and have the same porosity, given that both are prepared by the same process, i.e., the process described in US 3,007,878. Furthermore, with regards to the argument that the Examiner has not provided any motivation to optimize the solids content, the volume fraction and the weight ratio of the nonionic latex to polyvinyl alcohol, the Examiner would like to point out that a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In this case, it would have been obvious to one having ordinary skill in the art to have determined the optimum solids content, the optimum volume fraction and the optimum weight ratio of the nonionic latex to polyvinyl alcohol given that the drying property of the ink, the film forming properties of the ink-receiving layer and the gloss and sharpness of the image on the ink receiving layer can be controlled by optimizing the solids content and the weight ratio of one polymer to the other.

Hence, the above rejections are maintained.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheeba Ahmed whose telephone number is (703)305-0594. The examiner can normally be reached on Mon-Fri 8am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703)308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are

Application/Control Number: 09/350,060

Page 11

Art Unit: 1773

(703)305-5408 for regular communications and (703)305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-5665.



Sheeba Ahmed
January 6, 2003



Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700